situated during the display from 30° east to 30° west of the zenith. JOHN M'KEAGUE

s.s. *Acadia*, December 3

A MAGNIFICENT meteoric shower was visible here on November 27, from soon after sunset till the sky was clouded over at midnight. The maximum appears to have been between 8 and 9 o'clock.

At 6h. 30m. two observers watching opposite parts of the sky counted 850 meteors in 5 minutes. At 7h. 50m. (5h. 30m. Greenwich mean time) seven observers divided the heavens among them and together counted 525 in one minute. We all agreed that we had not been able to count all that we saw, so that this number is probably too small. At any rate I do not think the number of meteors visible between 7 and 9 p.m. was at any time less than 500 per minute. At 10h. I alone counted 210 in two minutes, facing the north, which was then partially clouded.

The majority were small, though quite a number were estimated as brighter than Venus. Nearly all had trails, usually bluish-white, but frequently reddish in the case of the larger ones. At no time did I see a trail remain visible more than three seconds after the disappearance of the meteor; some friends saw one which remained visible about five minutes, changing its shape a number of times and gradually vanishing.

I determined the radiant-point carefully by tracing back the paths of a great many. I place it 2° or 3° north-west of γ Andromedæ, R.A. 25° or 26°, δ + 43° or + 44°. And three times during the evening I saw meteors appear at this point, grow brighter, and die away at the same place, as though coming directly towards the observer. ROBERT H. WEST

Syrian Protestant College, Beyrout, Syria, November 30

I CAN quite confirm what Dr. Main says about the display of meteors being finer in this neighbourhood than seems generally to have been the case, as far as the accounts which I have seen enable me to judge. My attention was not called to the falling-stars until the display was past its best; but at about 7.30 p.m. I held my opera-glass steadily on one spot, and, watch in hand, counted the numbers which crossed the field of the glass, and, repeating this two or three times, I found that more than one per second crossed the field. The exact figures were eleven each ten seconds.

I hastily set up a Coulomb's torsion electrometer, and found the air highly charged with electricity, which may possibly not be without interest in considering the auroral displays mentioned in NATURE. ARTHUR WM. WATERS

Davos Dörfli, Switzerland

THE Bielid meteors were observed here last evening (November 27) in considerable numbers. I had been closely occupied during the day, and had quite forgotten that they were due, so that I did not look out for them immediately after dark, and probably missed the maximum of the shower. On going out of the house at 7.15 (Eastern Standard Time, 5h. later than Greenwich) my attention was at once attracted by seeing two meteors in the sky together, quickly followed by others. In walking about 100 yards I counted 12, and in 10 minutes 36. Up to 7.45 about 100 were recorded in all; in the next 15 minutes only 3 or 4 appeared, and at 8 o'clock I discontinued the observations. Five or six were of the 1st magnitude; about half of the whole number were of the 2nd or 3rd, and the rest of them were mostly very small. The colour, both of the meteors and of their trains, was always *reddish*—never greenish like that of the Leonids. The tracks were generally short, in very few cases exceeding 20°, and the motion was rather slow. The position of the radiant, determined largely by three nearly stationary meteors, but agreeing also with results obtained by plotting other meteor paths, was about 2° north-west from γ Andromedæ:—α, 1h. 50m.; δ, 43°·5. The radiant was not a point but rather a region about 4° long north and south, and 2° wide. C. A. YOUNG

Princeton, N.J., U.S.A., November 28

THE meteors were seen here till 7h. 10m., when the sky became overcast. They were first noticed before it was dark, as early as 4h. 35m. and they were then abundant, though smaller ones must have been hidden by the twilight. Although cloudless, the night was not favourable, and below an altitude of 45° there was much haze, so as to sensibly dim meteors that descended below this altitude.

Scarcely any of the meteors had an apparent nucleus. Nearly all appeared as sparks, and at first scarcely increased in size, at last suddenly blazing out into a considerable number of sparks, and then almost immediately disappearing, and there was an absence of the usual lingering streaks. The meteors were remarkably abundant, especially before 6 p.m. At 5h. 25m., facing south-east, I counted 21 in ten seconds, whilst a gentleman facing north-west counted 17. The number seen between 5 p.m. and 6 p.m. must have been at least 100 per minute. Though the meteors were almost constant, they were spasmodic as regards numbers, for every few minutes suddenly the air seemed full of them. Very few were erratic, and the stream going in one direction was a conspicuous feature. Meteors passing over the same path were alike as regards the length of their paths, with this qualification: the smaller ones were invisible sooner than those of larger size.

The average size of the larger ones was not great, yet early in the evening they were larger than those seen in 1872. The largest was seen exactly at 5h. 30m.; this passed close to α Andromedæ, and it was about equal to the apparent size of Venus.

Near the point of convergence, not far from γ Andromedæ, the paths were very short, and on the point itself there were no less than five that blazed out and died away without moving, three were mere points, and two were equal to Sirius in apparent size; they also disappeared at their maximum brightness, but did not separate into sparks.

There was evidently a second point of convergence near η Cassiopeiæ, and these meteors were not as brilliant as those converging to γ Andromedæ; no stationary ones were, however, noticed here.

The general colour was that of ordinary gas, a few only being intensely blue. Those nearer the horizon had a red look, but this was owing to the haze, for their colour only changed when passing into this haze.

In 1872 one meteor—a mere spark—I saw between me and a hill (80 feet elevation), and again to-night two others passed between me and a hill. These must have fallen to the ground. They were moving almost horizontally.

The display this evening, both as regards numbers and general appearance, was very similar to that of 1872

Shirenewton Hall, Chepstow, November 27 E. J. LOWE

P.S.—Owing to work in connection with the General Election this report was unfortunately not posted on the 28th. The 28th was unusually clear, with an absence of clouds; but from 8 p.m. till 9 p.m. I only noticed two meteors, and they came from the direction of Cassiopeia.

THE expected meteoric shower was seen here between 8 and 8.30 on the evening of November 27. The weather was misty and the sky partly overcast.

The stars fell in great numbers from an invisible (owing to cloud obscuration) radiant-point in or near Andromeda, and with a slow motion, their movement being more like that of large flakes of snow falling gently through the air than that of shooting-stars. Numbers fell, apparently perpendicularly; the greater part, however, took a southerly and south-westerly direction, very few taking an eastern and north-east course. The display was intermittent, occasionally nearly ceasing, and then showering in great numbers, which it was found impossible to count. About 8.30 p.m. the sky was completely overcast, and drizzly rain was falling.

The meteors were of uniform size and of the same colour—a bright whitish-yellow. A few of larger size were seen, and these were somewhat darker and their flight more prolonged. WM. H. LYNE

British Cemetery, Scutari, Constantinople

WITH reference to Mr. Haslam's remarks (NATURE, December 10, p. 128) as to the coincidence of auroræ with star-showers, I believe that their combined apparitions have no meaning further than that resulting from pure accident. I have seen many rich star-showers without the faintest visible trace of auroral manifestation, and many bright displays of auroræ have

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been watched here without indication of an associated star-shower. Still, the circumstance that certain meteoric displays have occurred contemporaneously with other phenomena, is interesting (though not, perhaps, significant, as intimating any physical connection), and such records should always be preserved, as possibly having a value which further observations may elucidate.

During the great meteoric shower of November 13, 1866, several observers detected a faint diffused light of an auroral character in the northern sky.

In 1880 there were bright displays of auroræ on August 11, 12, and 13. Whilst watching the Perseid meteor-shower on those nights, I noticed the successive appearances of streamers and light condensations in the northern quadrant. On the 13th the sky was much lighter than usual, though no streamers or bright glows were visible. The moon set before 10h., yet at midnight the air was not dark; objects around were discernible with remarkable facility beneath the luminous gauze of the aurora apparently diffused over the sky.

During the present month I have been engaged in a series of observations of the Geminid meteor-shower. On December 7, 8, 9, and 10, I especially noticed singular light-radiations, like broad films of faint white cloud, in the northern region. These were very striking on December 9, and persistent during several hours. The most conspicuous of these radiations stretched out of the horizon in the north-north-east, and ran obliquely a considerable distance east, where it enveloped the stars of Virgo and Leo. The effect was somewhat similar to that of the zodiacal light, but in the present case the phenomenon had an evident tendency to remain in the vicinity of the horizon. On its upper side I distinguished very faint indications of streamers, with alternating spaces rendered very dark by contrast. The appearances were, however, so constant, that they can hardly be associated with the characteristic mobile forms of ordinary auroræ. The sky generally was very light, and I have specially noticed this fact on several other occasions this month, when an observer might readily have assumed that the moon, in one of her quarters, was present in the firmament.

A suffused glowing of the whole sky such as that now recorded has not infrequently been visible here in past years during the progress of meteoric observations. Though no definite auroræ (in its normal features) can be descried, there is obviously some modification often present imparting to the firmament those peculiarities of aspect and tint which are far too striking to escape notice. I believe that scarcely a very clear night passes but there may be traced, with a critical eye, some feeble traces of auroræ, or their closely-allied phenomena. Could these ever-varying sky-tints be studied in a fine climate, I feel assured we might look for some interesting results.

Bristol, December 12 W. F. Denning

The Supposed Fall of an Aërolite in Naples

The late beautiful meteoric display, which was well seen here, has given rise to a somewhat ludicrous incident. The local papers on Sunday evening and Monday contained an account of an aërolite that had fallen in the Strada Fiorentino, one of the principal thoroughfares of the town; that this stone weighed between 6 and 7 kilogrammes, and had nearly struck some people who were passing. This announcement was followed by a description of the stone from the pen of one of the professors in the University, together with an account of meteorites in general.

Such a display of erudition, coinciding with the bombardment our earth has had from Biela's comet, prevented my sleeping all night, and, as early as etiquette would allow, I paid a visit to the house of the two professors, the *happy* (?) possessors of this would-be aërolite. The first examination convinced me that we had to deal with a shoemaker's lapstone of Vesuvian lava, the patina being nothing more than the polish of grease, dirt, with wear and tear. A small fragment was given me, which, after being sectionised, showed a typical leucitophyre of Vesuvius—probably the lava of 1631 from "La Scala" quarries.

I should not have written to you had it not been that such confirmation had been given by men of position, whom I have now obliged to admit their mistake. Probably, however, the report of the fall of this supposed aërolite has already spread, so that I fear it may be included in lists of historic meteorites.

I may say that the stone had probably fallen or been thrown from one of the roofs of the neighbouring high houses.

December 9 H. J. Johnston-Lavis

The Rotation-Period of Mars

In the number of Nature of November 26 (p. 81), Mr. Proctor mentions one or two points in my investigation of the rotation-period of Mars, requiring correction.

The first is, that I did not use Proctor's final result for the period, but one which he published in 1869, differing 0·02s. from the former. As I intended to determine from the whole series of Mars's drawings the correction of the rotation-period, it was perfectly indifferent what value I adopted in my calculations; the only condition was, the error should not be so great as to cause an erroneous interpretation of the Mars pictures of former years. A difference of 0·02s. in the adopted rotation-period changes the position of the markings in the drawings of Huygens and Hook but 2°·9, so that for my purpose I could adopt Proctor's value of 1869 as well as that of 1873. I chose the former, as it seemed, after a preliminary reduction of Schrœter's observations, to be nearer the truth; but my results would have been absolutely the same had I chosen the second.

The second remark of Mr. Proctor's is the following:—"Prof. Backhuyzen, like Mr. Denning some time since, has taken Kaiser's result uncorrected for the clerical errors—very seriously affecting it—which I detected in 1873." As I have used only Kaiser's *original observations*, and no *result whatever, corrected or uncorrected*, I must conclude that Mr. Proctor has not read my paper very accurately; when he does so, he will see that he is wrong. At the same time he can see that on p. 58 the time of Hook's observations is given, "March 12, 12h. 20m. and 12h. 30m.," and from the indication on p. 55, that there is an integral number of revolution-periods of 24h. 37m. 22·74s. between 1862, November 1, 9h. 55m. mean time Berlin, and 1672, January 1, 22h. 11·0m. mean time Paris, he may conclude, after a slight calculation, that I did not count the years 1700 and 1800 as leap-years. My results are, therefore, free from the errors Mr. Proctor indicated; I hope I made no other.

It seems, however, very difficult to avoid them wholly. Mr. Proctor, for instance, who occupied himself so much with the subject, writes, in the above-mentioned number of Nature of November 26: "Kaiser counts three days too many in comparing Hook's observation with his own: one day, through a mistake in correcting for change of style and two days (apparently) from counting the years 1700 and 1800 as leap-years." That number of *three* days must be *one* day, for Kaiser indicated as the time of Hook's observations, March 13, 12h. 20m. new style, instead of March 12; by this error the number of days from 1862, November 1, till Hook was one day too small; but, by counting 1700 and 1800 as leap-years, Kaiser added two days too many, so that the total error was one day, and not three. Mr. Proctor's conclusions, based on the latter assumption, are naturally erroneous.

H. G. Van de Sande Bakhuyzen

Leyden Observatory, December 9

Ventilation

In Nature for December 10 (p. 132) I note the suggestion:—"In all new buildings where efficient ventilation is desired, it would be preferable to construct a shaft at one side of, or surrounding the chimney-flue, with an inlet near the ceiling of the room, and the outlet at the level of the chimney-top, so that the air escaping from the room would have its temperature kept up by contact with the chimney, thus aiding the up-draught, whilst the risk of reflux of smoke would be avoided." In building my own house some eight years ago this system was adopted in every room, the outlet over the chandelier being carried across to the side of the chimney of the same room, the two flues being carried up side by side to the chimney stack, each outlet having its own cowl. In practice this has proved a total failure, from the simple fact that the fire-flue is both longer, owing to its starting at a lower level, and that it is also hotter than the other. In the absence of any fire there is a strong upward current in both, but the instant the fire is lighted the upward current in the ceiling ventilator stops, and in a few minutes is reversed, the cold air and collected smoke from the chimney outlet coming in with such force that we have been compelled to make up every ceiling ventilator in the house except one, which, although useless when a fire is lighted, is not a nuisance. Many other experiments in automatic ventilation were tried, so that in case one system failed others might be available, and I regret to say that the only useful remnant of the experiment is the ventilation from the entrance hall, which

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